

QUALITY ASSURANCE PLAN FOR MV SWITCHGEAR (TYPE - UNIGEAR/LEANGEAR CUBICLE WITH " VD4/Vind - BREAKER")												
SUPPLIER NAME & ADDRESS: ABB India Ltd. Plot No. 79, Street No. 17, MIDC Satpur, Nashik - 422007			Sale Order No - 4203043946					Issued by ELDS PAIS-QA				
			Customer - ROCKY SWITCHGEAR A/C NEW MANGALORE PORT					Revision No. 00				
			PO No. - RSBPO2425032 dated. 06.02.2025					Date : 02/01/2025				
			Item : For MV Switchgear panel upto 33 kV					QAP No. 1VYN479999-262				
SL. NO.	COMPONENT & OPERATONS	SSL. NO.	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORDS	INSPECTION BY			REMARKS
									M ABB/ABB Sub-Supplier	N TPI	C Customer/End client	
A) RAW MATERIAL INSPECTION												
1	Alu- Zinc / Galvanized sheet/ CRCA / Stainless steel	a)	Dimensions	Measurement	5 samples / type	(EN 10346/ ASTM A 792) /EN10346/ IS 277 /IS 513/IS 6911	(EN 10346/ ASTM A 792) /EN10346/ IS 277 /IS 513/IS 6911	Supplier Test Certificates	P/R	R	R	
		b)	Finish	Visual	100%							
		c)	Material composition	Measurement	1 pc min.							
2	Aluminium Busbar material	a)	Hardness	Measurement	2 pcs min.	IS : 5082	IS : 5082	Supplier Test Certificates	P/R	R	R	
		b)	Conductivity	Measurement	2 pcs min.	IS : 5082	IS : 5082					
		c)	Dimension	Measurement	1 AQL 1.5	IS : 3965	IS : 3965					
		d)	Surface finish	Visual	100%	IS : 5082	IS : 5082					
3	Copper Busbar material	a)	Hardness	Measurement	2 pcs min.	IS : 1897/ IS 613	IS : 1897/ IS 613	Supplier Test Certificates	P/R	R	R	
		b)	Conductivity	Measurement	2 pcs min.	IS : 1897/ IS 613	IS : 1897/ IS 613					
		c)	Dimension	Measurement	1 AQL 1.5	IS : 3052	IS : 3052					
		d)	Surface finish	Visual	100%	IS : 1897/ IS 613	IS : 1897/ IS 613					
B) COMMON COMPONENTS												
1	Support Insulators	a)	Dimension	Measurement	II AQL 1.5	Drawing	Drawing	Supplier Test Certificates	P/R	R	R	
		b)	Power frequency (Rout.)	Electrical	100%	Drawing	Drawing					
		c)	Surface finish	Visual	100%	-	-					
2	Wires ISI Marked	a)	Visual	Visual	100%	-	-	Supplier Test Certificates	P/R	R	R	
		b)	Dimension	Measurement	S3 AQL 1.5	Std. Drg.	Std. Drg.					
		c)	Resistance	Measurement	Each batch	IS:694	IS:694					
		d)	Power frequency	Measurement	Each batch	IS:694	IS:694					
3	Protection Relays & Auxiliary Relays	a)	Physical condition	Visual	100%	IS :3231	IS :3231	Manufacturer's Test Certificate	P/R	R	R	
		b)	Functional test	Testing	100%							
4	Current Transformer (Cast Resin)	a)	Physical condition	Visual	100%	IS : 2705	IS : 2705	Manufacturer's Test Certificate	P/R	R	R	
		b)	Routine test including partial	Electrical	100%							
5	Potential Transformer (Cast Resin)	a)	Physical condition	Visual	100%	IS : 3156	IS : 3156	Manufacturer's Test Certificate	P/R	R	R	
		b)	Routine test	Electrical	100%							
6	Indicating/Integrating Instruments (Ammeters, Voltmeters, MFM's, etc.)	a)	Physical condition	Visual	100%	IS : 1248	IS : 1248	Manufacturer's Test Certificates	P/R	R	R	
		b)	Routine test	Electrical	100%							

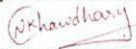
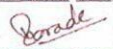
कार्यपालक अभियन्ता (मनुष्य)
 Executive Engineer (Ele)
 नव मंगलूर पोर्टन प्राधिकरण
 New-Mangalore Port Authority
 पणबूर / Panambur - 575010



QUALITY ASSURANCE PLAN FORM MV SWITCHGEAR (TYPE - UNIGEAR/LEANGEAR CUBICLE WITH " VD4/Vind - BREAKER")												
SUPPLIER NAME & ADDRESS: ABB India Ltd. Plot No. 79, Street No. 17, MIDC Satpur, Nashik - 422007			Sale Order No - 4203043946				Issued by ELDS PAIS-QA					
			Customer - ROCKY SWITCHGEAR A/C NEW MANGALORE PORT				Revision No. 00					
			PO No. - RSBPO2425032 dated. 06.02.2025				Date : 02/01/2025					
			Item : For MV Switchgear panel upto 33 kV				QAP No. IVYN479999-262					
SL. NO.	COMPONENT & OPERATIONS	SSL. NO.	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORM	FORMAT OF RECORDS	INSPECTION BY			REMARKS
								M ABB/ABB Sub-Supplier	N TPI	C Customer/End client		
C) VACUUM CIRCUIT BREAKER FINAL INSPECTION												
1	Breaker Type - VD4/Vind	a)	Measurement of resistance of main circuit.	Electrical	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	Customer inspection on sample breaker of each type/rating
		b)	Routine functional test (On no load)	Electrical	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
		i)	5 closing & 5 opening operation at specified minimum voltage	Electrical	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
		ii)	5 closing & 5 opening operation at specified maximum voltage	Electrical	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
		iii)	5 Close & open operation at rated voltage	Electrical	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
		iv)	5 F-C-O Operations at rated voltage	Routine	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
		c)	Breaker Close/Trip time	Routine	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
		d)	HV/One minute power frequency on main circuit	Routine	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
2	Vacuum Contactor Type - VSC (if applicable)	a)	Functional & Operational Checks	Electrical	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
		b)	5 Close-Open Operations	Mechanical	100%	IEC : 62271-100/ Approved Drg.	IEC : 62271-100/ Approved Drg.	Routine Test Certificates	P	W	W	
3	Disconnecter Switch Type - NALF (if applicable)	a)	Motorized disconnecter ON-OFF operations - 5 operations with 2 min. time delay	Electrical	100%	IEC : 62271-102(2013)	IEC : 62271-102(2013)	Routine Test Certificates	P	W	W	
		b)	Contact Resistance Measurement	Electrical	100%	IEC : 62271-102(2013)	IEC : 62271-102(2013)	Routine Test Certificates	P	W	W	

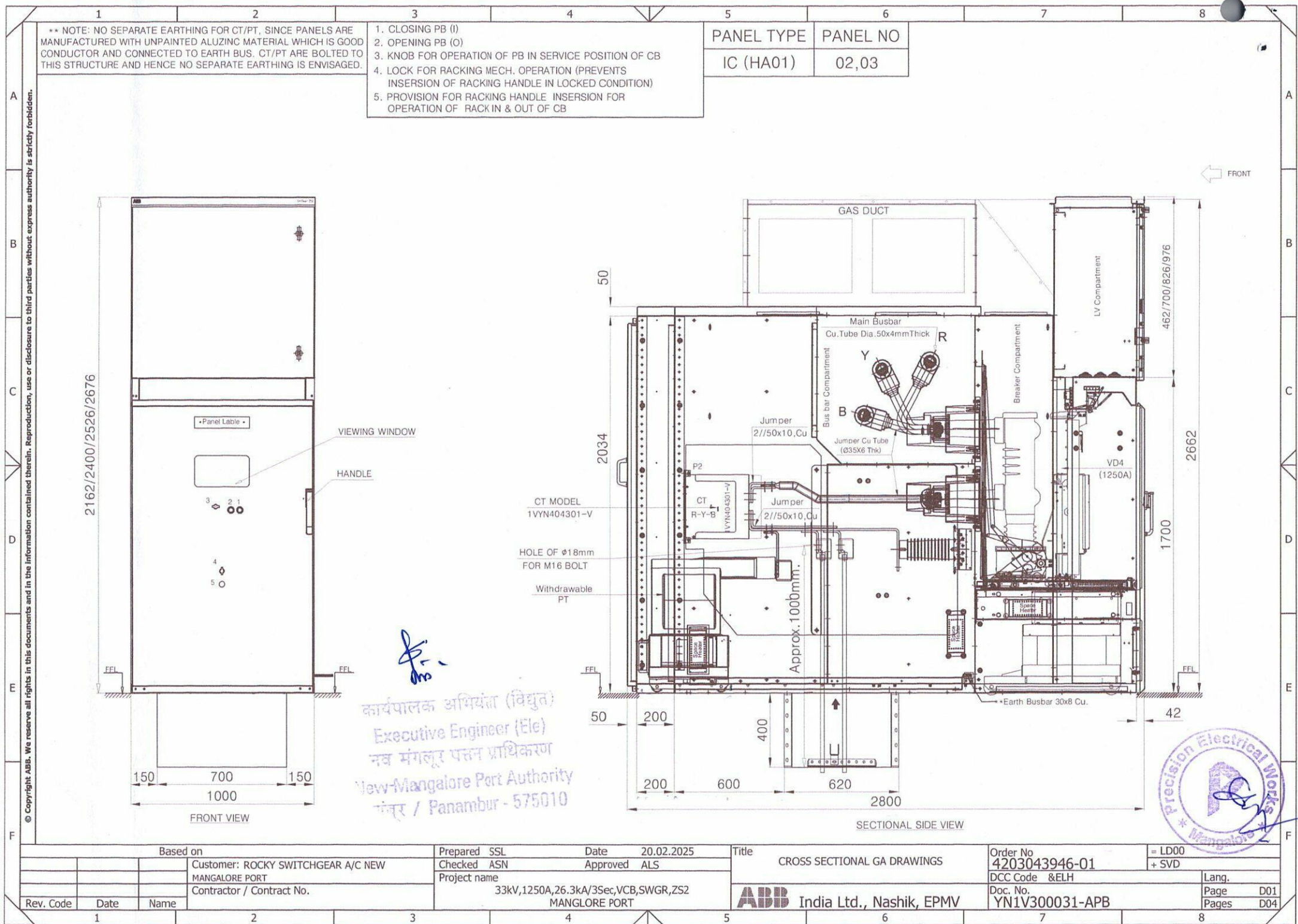

 कार्यपालक अभियंता (मिबुत)
 Executive Engineer (Els)
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 New-Mangalore Port Authority
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									M ABB/ABB Sub-Supplier	N TPI	C Customer/End client	
D) FINAL INSPECTION (Complete Switchboard)												
1	Routine Tests		Physical condition (Identification/Location of components, Compartmentalization, Busbar marking)	Visual	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	Customer Witness test on sample panels of each type/rating
		a)	HV/Power frequency test on main circuit	Electrical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		b)	HV/Power frequency test on auxiliary circuit	Electrical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		c)	Racking-In & Out operations	Mechanical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		d)	Verification of wiring & interlocks	Electrical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		e)	Functional test of panel, auxiliary equipment's	Electrical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		f)	Insulation Resistance before & after HV	Electrical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		g)	Dimensional verification of panels	Physical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		h)	Bill of Material & Label verification.	Visual	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		i)	Interchangeability of breaker (applicable for identical)	Mechanical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.		P	W	W	
		j)	Paint shade verification and Dry film thickness, adhesion test	Visual/ Measurement	Sample panel	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		k)	Mechanical operation & interlocks check	Mechanical	10% of lot	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		l)	Measurement of resistance of main circuit	Electrical	Sample panel	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
		m)	Secondary Current Injection for CT's and relays	Electrical	100%	IEC:62271-200/ Approved Drg.	IEC:62271-200/ Approved Drg.	Routine Test Report	P	W	W	
			Legends* P - Perform R - Review W - Witness		M - Manufacturer (ABB/ABB sub-supplier) N - Third Party Inspector C - Customer/End Client		Prepared & Checked By  Nitesh Chowdhary		Approved By  Vijay Borade		Stamp 	


 कार्यपालक अभियंता (विद्युत)
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 एग्रीकरण / Pahal
 250119

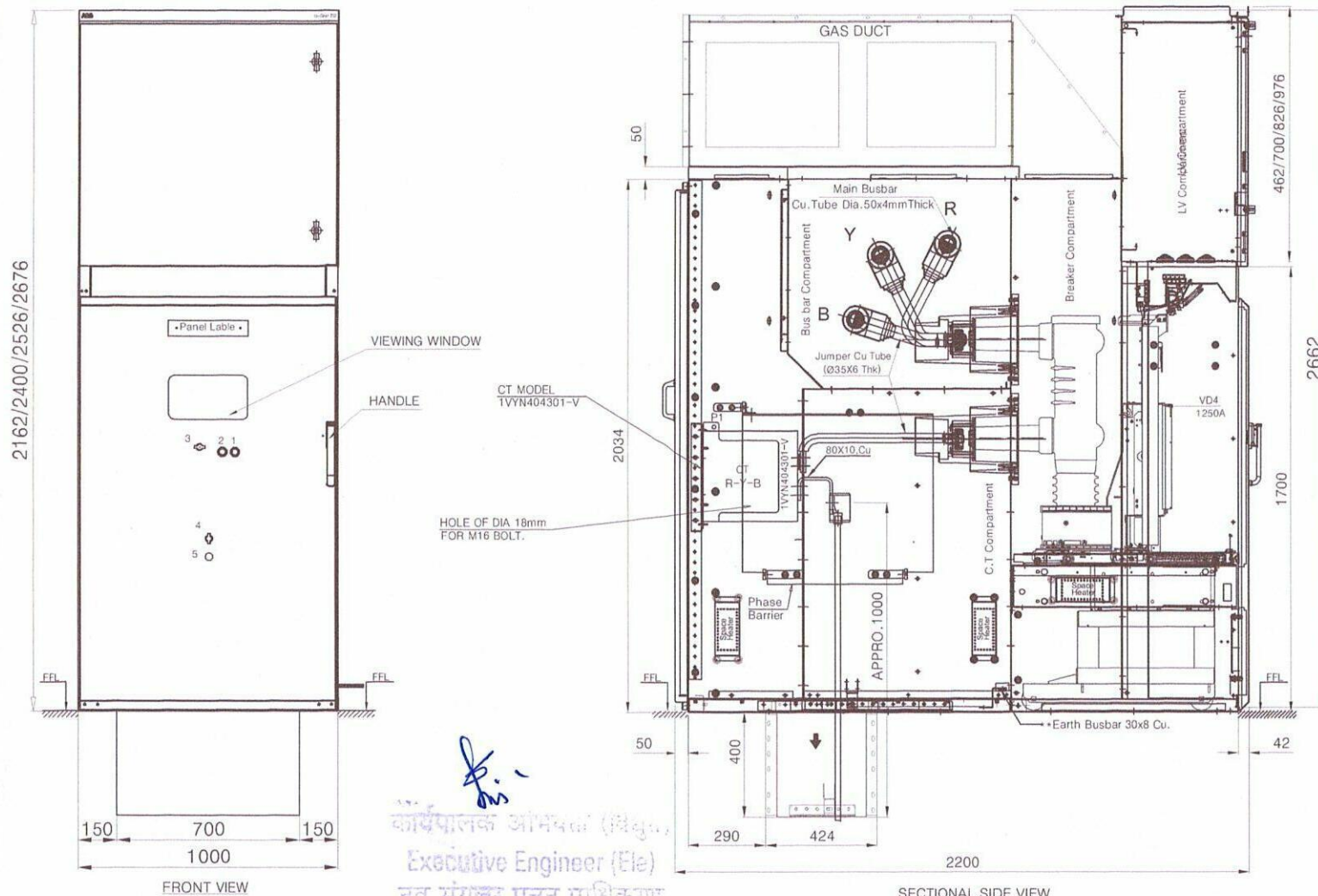




** NOTE: NO SEPARATE EARTHING FOR CT/PT, SINCE PANELS ARE MANUFACTURED WITH UNPAINTED ALUZINC MATERIAL WHICH IS GOOD CONDUCTOR AND CONNECTED TO EARTH BUS. CT/PT ARE BOLTED TO THIS STRUCTURE AND HENCE NO SEPARATE EARTHING IS ENVISAGED.

1. CLOSING PB (I)
2. OPENING PB (O)
3. KNOB FOR OPERATION OF PB IN SERVICE POSITION OF CB
4. LOCK FOR RACKING MECH. OPERATION (PREVENTS INSERSION OF RACKING HANDLE IN LOCKED CONDITION)
5. PROVISION FOR RACKING HANDLE INSERSION FOR OPERATION OF RACK IN & OUT OF CB

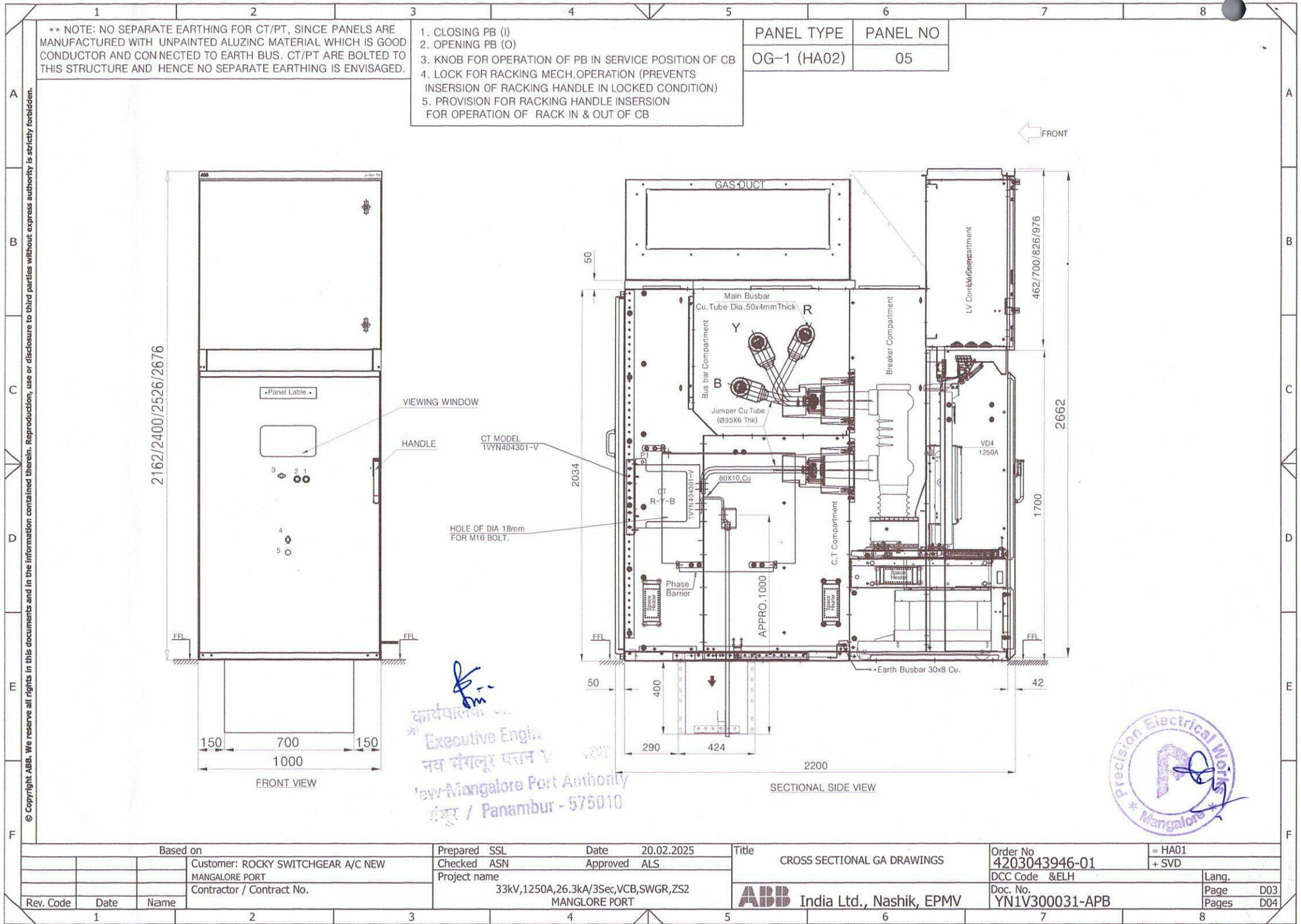
PANEL TYPE	PANEL NO
OG-1 (HA02)	04



कार्यपालक अभियंता (विद्युत)
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Mangalore - 575010



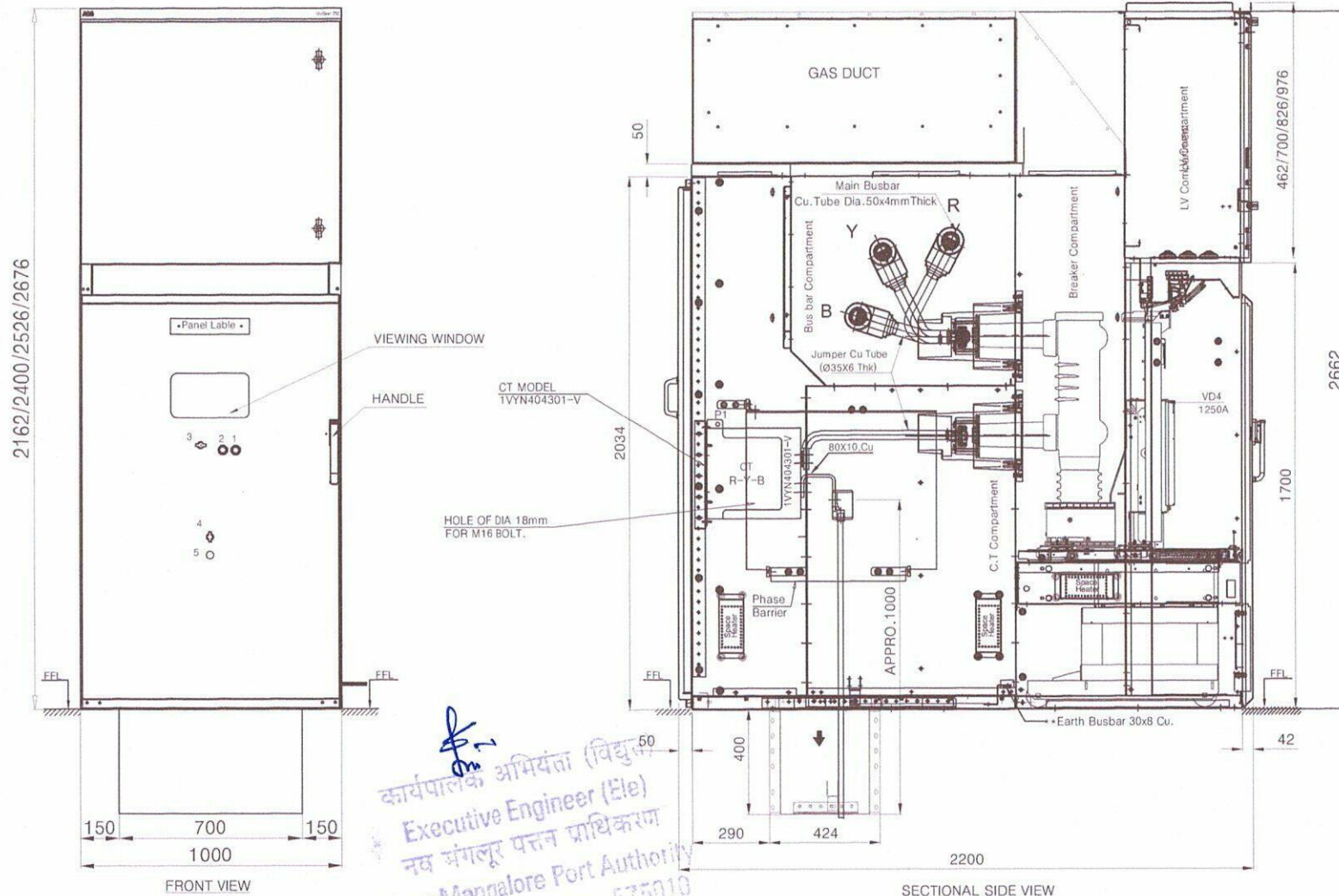
Based on			Prepared SSL	Date 20.02.2025	Title	Order No	= HA01
Customer: ROCKY SWITCHGEAR A/C NEW			Checked ASN	Approved ALS	CROSS SECTIONAL GA DRAWINGS	4203043946-01	+ SVD
MANGALORE PORT			Project name			DCC Code & ELH	Lang.
Contractor / Contract No.			33kV, 1250A, 26.3kA/3Sec, VCB, SWGR, ZS2			Doc. No.	Page D02
			MANGALORE PORT		ABB India Ltd., Nashik, EPMV	YN1V300031-APB	Pages D04
Rev. Code	Date	Name					



** NOTE: NO SEPARATE EARTHING FOR CT/PT, SINCE PANELS ARE MANUFACTURED WITH UNPAINTED ALUZINC MATERIAL WHICH IS GOOD CONDUCTOR AND CONNECTED TO EARTH BUS. CT/PT ARE BOLTED TO THIS STRUCTURE AND HENCE NO SEPARATE EARTHING IS ENVISAGED.

1. CLOSING PB (I)
2. OPENING PB (O)
3. KNOB FOR OPERATION OF PB IN SERVICE POSITION OF CB
4. LOCK FOR RACKING MECH. OPERATION (PREVENTS INSERTION OF RACKING HANDLE IN LOCKED CONDITION)
5. PROVISION FOR RACKING HANDLE INSERTION FOR OPERATION OF RACK IN & OUT OF CB

PANEL TYPE	PANEL NO
OG-2 (HA03)	01



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New Mangalore Port Authority
पणदूर / Panambur - 575010



Based on			Prepared SSL	Date 20.02.2025	Title	Order No	= HA01
Customer: ROCKY SWITCHGEAR A/C NEW			Checked ASN	Approved ALS	CROSS SECTIONAL GA DRAWINGS	4203043946-01	+ SVD
MANGALORE PORT			Project name			DCC Code & ELH	Lang.
Contractor / Contract No.			33kV, 1250A, 26.3kA/3Sec, VCB, SWGR, ZS2			Doc. No.	Page D04
			MANGALORE PORT		ADD India Ltd., Nashik, EPMV	YN1V300031-APB	Pages D04
Rev. Code	Date	Name					
1							
2							
3							
4							
5							
6							
7							
8							

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Device tag list

Device tag Part number Type number	Function text Article designation	X-Ref	Symbol
	INCOMING CABLE		
	OUTGOING CABLE		
-QAB	DRAWOUT CIRCUIT BREAKER		
-BAT (VT)	2 CORE POTENTIAL TRANSFORMER DRAW OUT TYPE		
-BCT (CT)	2 CORE CURRENT TRANSFORMER		

Device tag Part number Type number	Function text Article designation	X-Ref	Symbol
-PGA1	ANALOG AMMETER		
-PGV1	ANALOG VOLTMETER		
-SFV1	VOLTMETER SELECTOR SWITCH		
-SFA1	AMMETER SELECTOR SWITCH		
-PGM2	TRIVECTOR METER		
-TFM1	MEGHA WATT METER		
-SFS1	BREAKER CONTROL SWITCH		
-SFS2	LOCAL-REMOTE SWITCH		

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New Mangalore Port Authority
पणवूर / Panambur - 575010



Based on			Prepared MSP	Date 19/02/2025	Title	COMMON DRAWINGS	Order No	= HA00
Customer: ROCKY SWITCHGEAR A/C NEW MANGALORE PORT			Checked BG	Approved SR	Device tag list 01		4203043946-01	+ SLD
Contractor:			Project name		33kV, 1250A, 26.3kA/3Sec, VCB, SWGR, ZS2 MANGALORE PORT		DCC Code &EFA	
Rev. Code	Date	Name			India Ltd., Nashik, ELDS		Lang.	
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							Pages 12	